

# ***WATERDOWN***

***water pollution  
control plant***

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET, TORONTO 5

OFFICE OF THE GENERAL MANAGER

Members of the Waterdown Local Advisory Committee,  
Town of Waterdown.

Gentlemen:

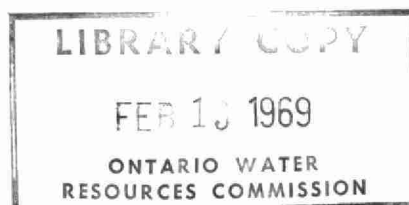
We are happy to present you with the 1967 Operating Summary for the  
Waterdown Water Pollution Control Plant, OWRC Project No. 2-0163-63.

Your co-operation with our staff throughout the year has been appreciated.  
Only with such co-operation can the war against water pollution be waged  
effectively.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,  
General Manager.





ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET  
TORONTO 5

J. A. VANCE, LL.D.  
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J. H. H. ROOT, M.P.P.  
VICE-CHAIRMAN

D. S. CAVERLY  
GENERAL MANAGER  
W. S. MACDONNELL  
COMMISSION SECRETARY

General Manager,  
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Waterdown Water Pollution Control Plant, OWRC Project No. 2-0163-63.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, reading "D. A. McTavish".

D. A. McTavish, P. Eng.,  
Director,  
Division of Plant Operations.

## FOREWORD

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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# **WATERDOWN**

## **water pollution control plant**

operated for

THE TOWN OF WATERDOWN

by

THE ONTARIO WATER RESOURCES COMMISSION

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VICE-CHAIRMAN: J. H. H. Root, M. P. P.

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### DIVISION OF PLANT OPERATIONS

DIRECTOR: D. A. McTavish

Assistant Director: C. W. Perry  
Regional Supervisor: A. C. Beattie  
Operations Engineer: R. S. McKittrick

801 Bay Street    Toronto 5

## **'67 REVIEW**

The operating cost for the year was \$13,585.15. However, because of the abnormally low raw sewage flows received at the plant, the operating cost per million gallons of sewage treated was \$620.33.

A total of 21.90 million gallons of raw sewage was treated at the plant during 1967. The average BOD and suspended solids removal efficiencies were 92.3 and 92.5 percent respectively, indicating satisfactory treatment.

The plant staff consists of a chief operator plus casual labour when required. Supervision of the plant is on seven-day, 40-hour per week basis. The former chief operator resigned in June and R. Skewes assumed the position of Chief Operator in July.



## PROJECT COSTS

NET CAPITAL COST (Estimated)		\$475,418.08
DEDUCT - Payments from Municipalities	\$119,885.79	
- Portion Financed by CMHC-(Estimated)	<u>140,977.13</u>	<u>260,862.92</u>
Long Term Debt to OWRC		<u>\$214,555.16</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967		\$ <u>10,021.82</u>
Debt Retirement		\$ 4,469.00
Reserve		3,062.07
Interest Charged		12,293.65
Net Operating		<u>13,585.15</u>
TOTAL		\$ <u>33,409.87</u>

### RESERVE ACCOUNT

Balance at January 1, 1967	\$ 3,193.93
Deposited by Municipality	3,062.07
Interest Earned	<u>249.49</u>
	\$ 6,505.49
Less Expenditures	<u>-</u>
Balance at December 31, 1967	\$ <u>6,505.49</u>

## MONTHLY OPERATING COSTS

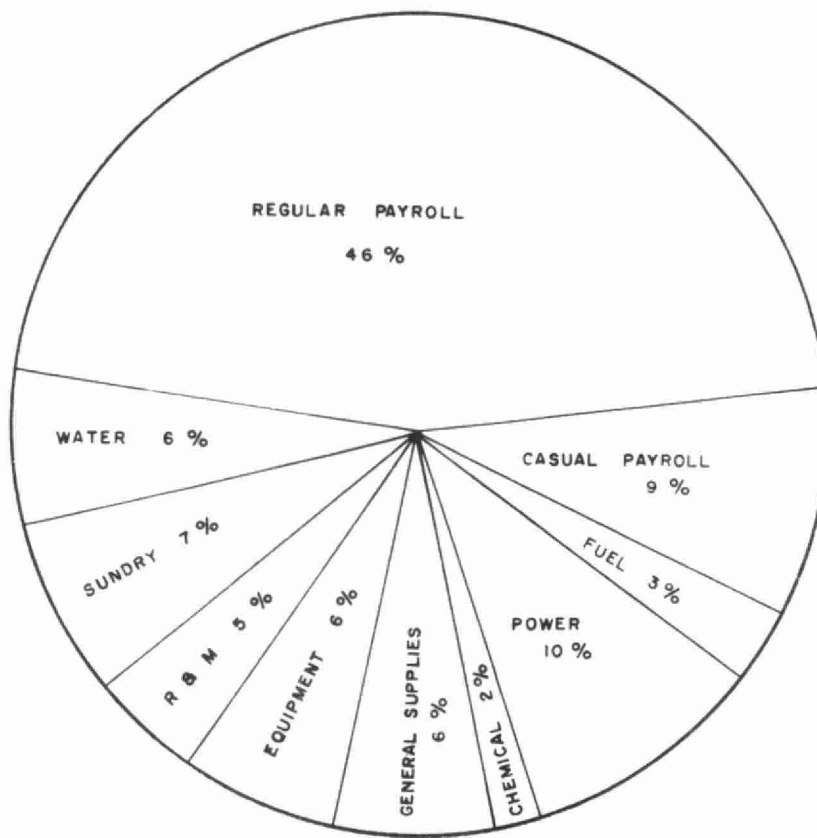
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	579.68	444.60			130.02		5.00				
FEB	677.70	415.36		64.34	152.96		9.20			25.99	9.85
MARCH	883.52	618.50		61.93	90.50		57.79			54.80	
APRIL	727.33	437.35		77.11	102.16		21.87		73.77	15.07	
MAY	816.98	479.42		53.19	104.29		36.00	5.49	101.50	37.09	
JUNE	1397.47	699.80	343.84	33.98	99.59		151.26		38.00	19.00	12.00
JULY	1504.26	536.90	188.01	19.72	115.10		119.24	341.10	35.00	149.19	
AUG	1346.60	486.49	246.80	2.20	106.26	45.88	58.06	93.67	49.36	40.83	217.05
SEPT	1275.39	718.14	252.14	13.23	105.18		140.15	28.77		17.78	
OCT	1226.76	456.26	56.81		104.17		72.46	17.33	112.72	43.91	363.10
NOV	1496.93	482.46	167.39	26.39	106.18		75.57	307.09	46.80	285.05	
DEC	1652.53	466.75	35.75	59.74	106.36	228.38	109.16	49.17	156.82	283.50	156.90
TOTAL	13585.15	6242.03	1290.74	411.83	1322.83	274.26	855.76	842.62	613.97	972.21	758.90

\* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$137.52

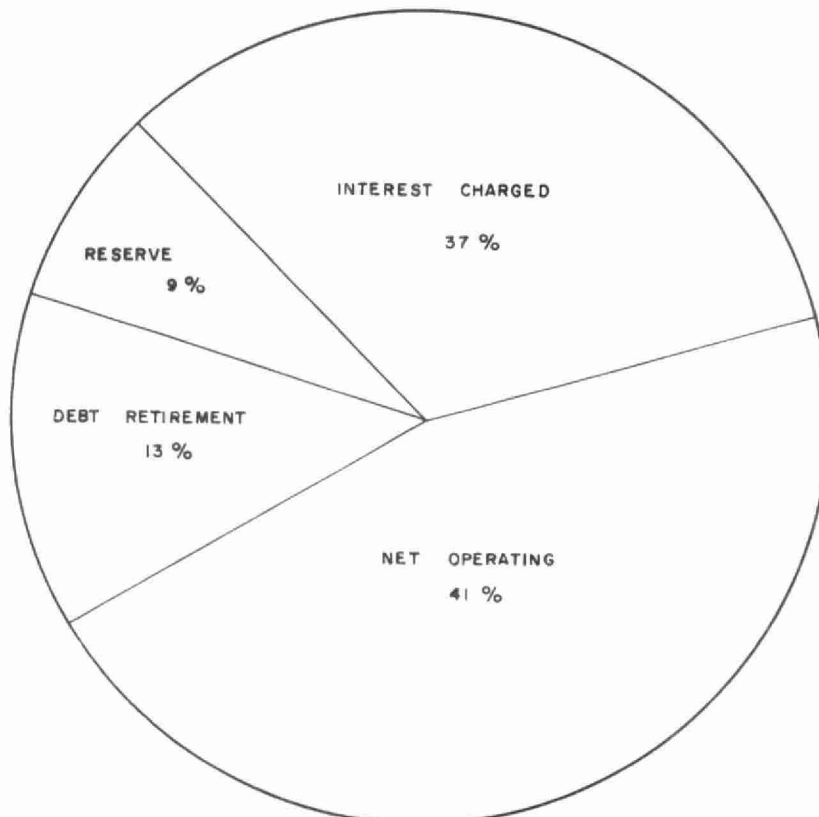
## YEARLY OPERATING COSTS

YEAR	M. G. TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1967	21,900	\$13,585.15	\$620.33	30 CENTS

## 1967 OPERATING COSTS

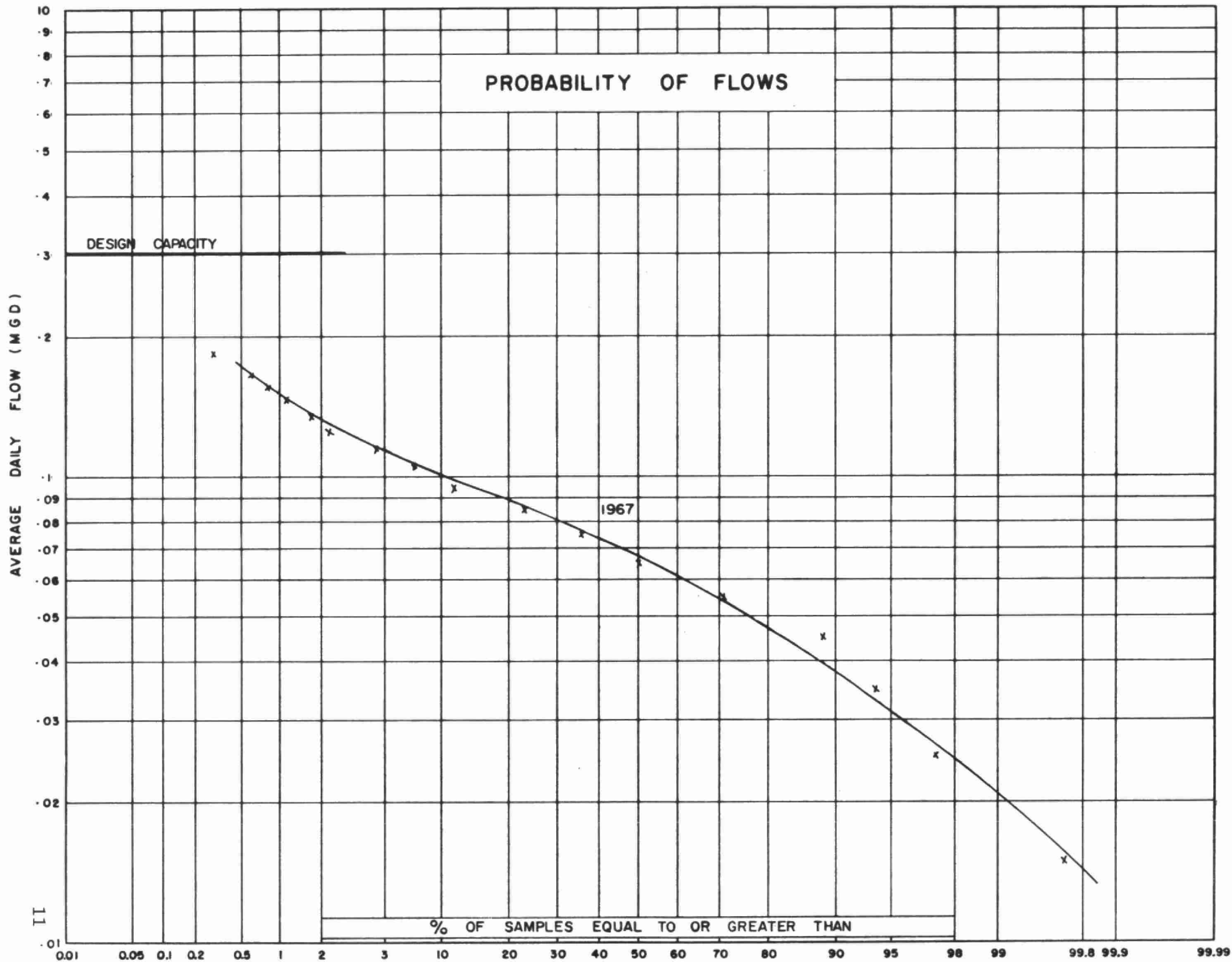


## TOTAL ANNUAL COST



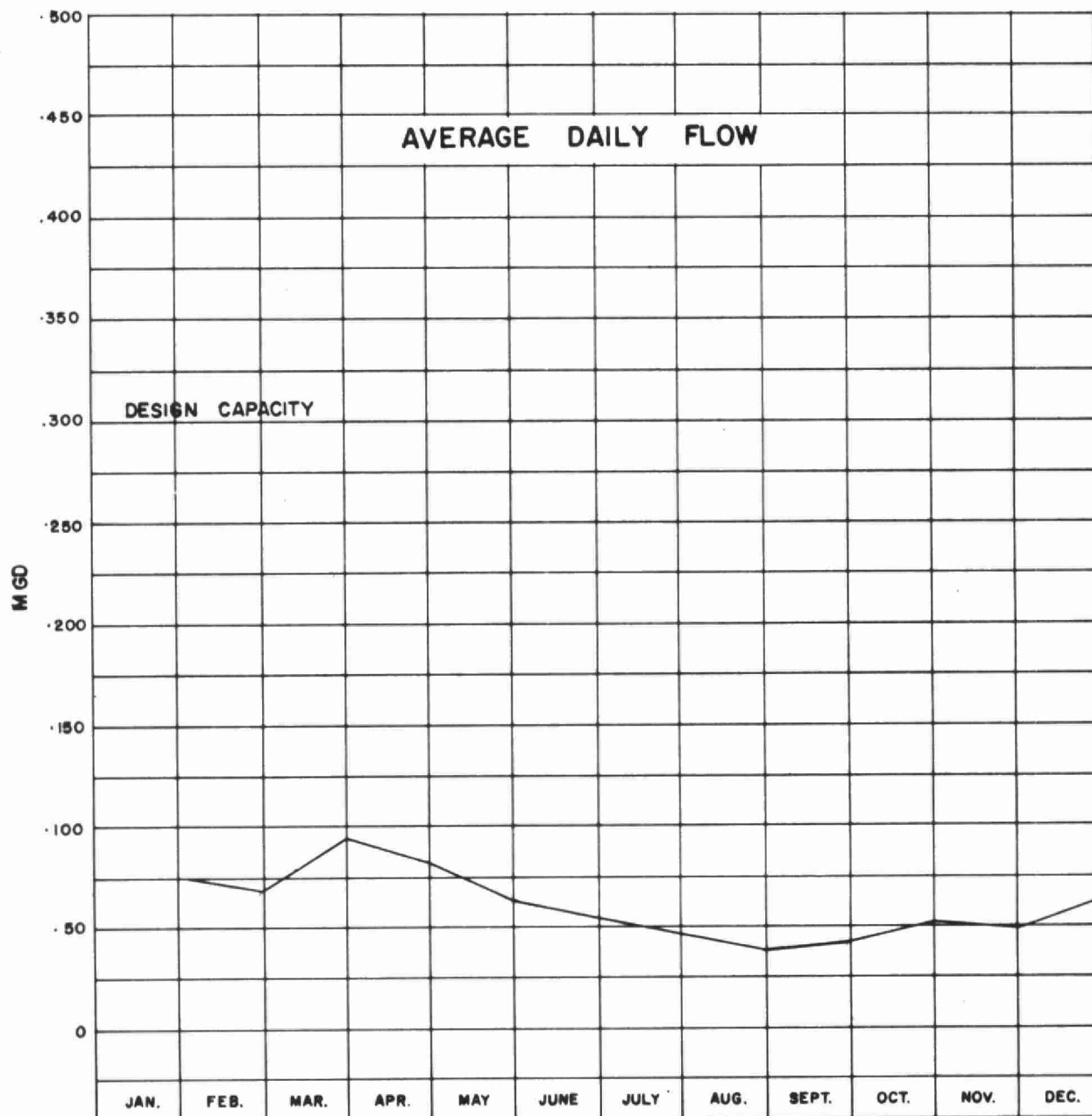
## **Process Data**

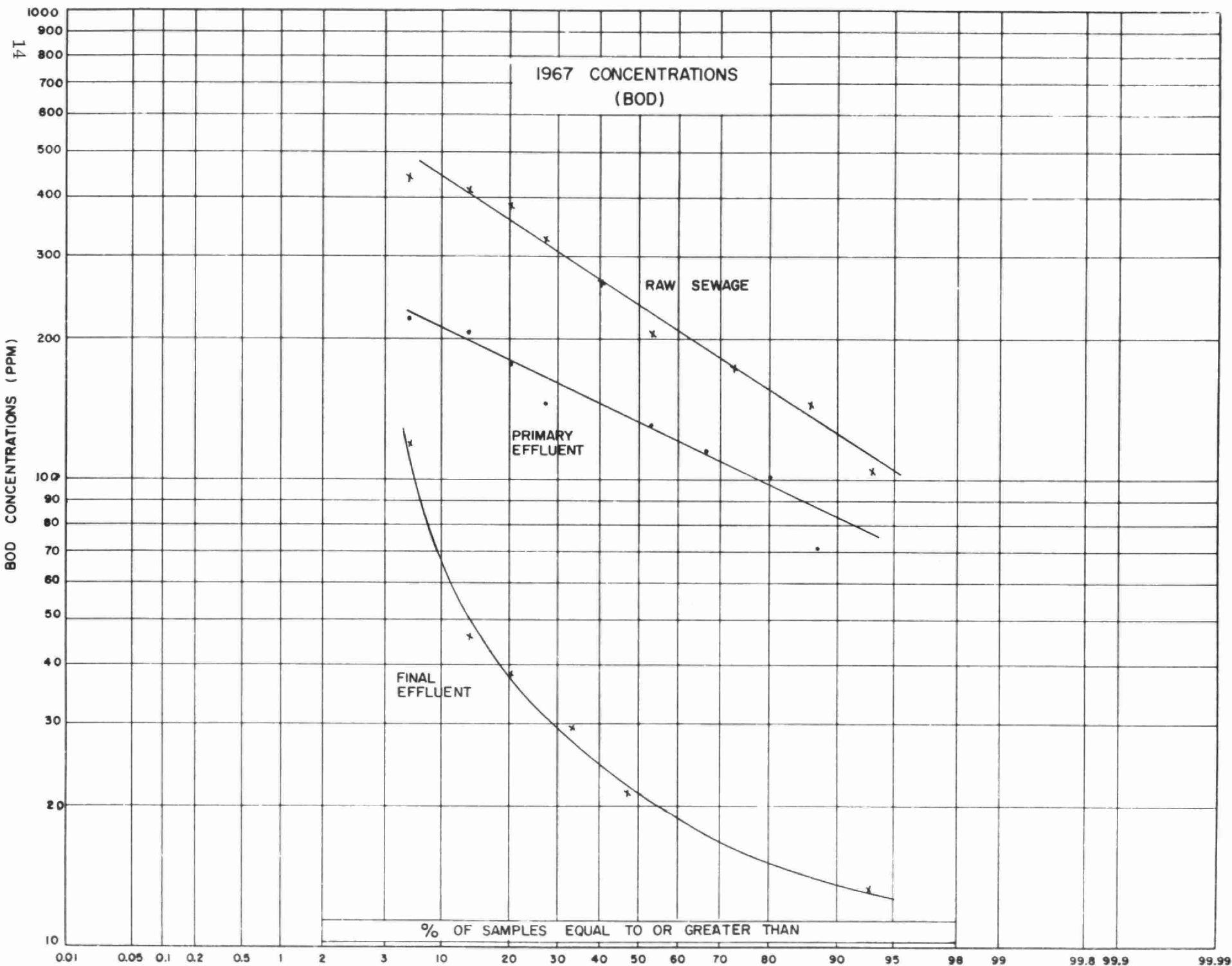
The average daily flow during 1967 was 0.060 million gallons which is 20 percent of the design flow. A maximum daily flow of 0.185 million gallons occurred in December and a minimum daily flow of 0.012 million gallons occurred in July and October.



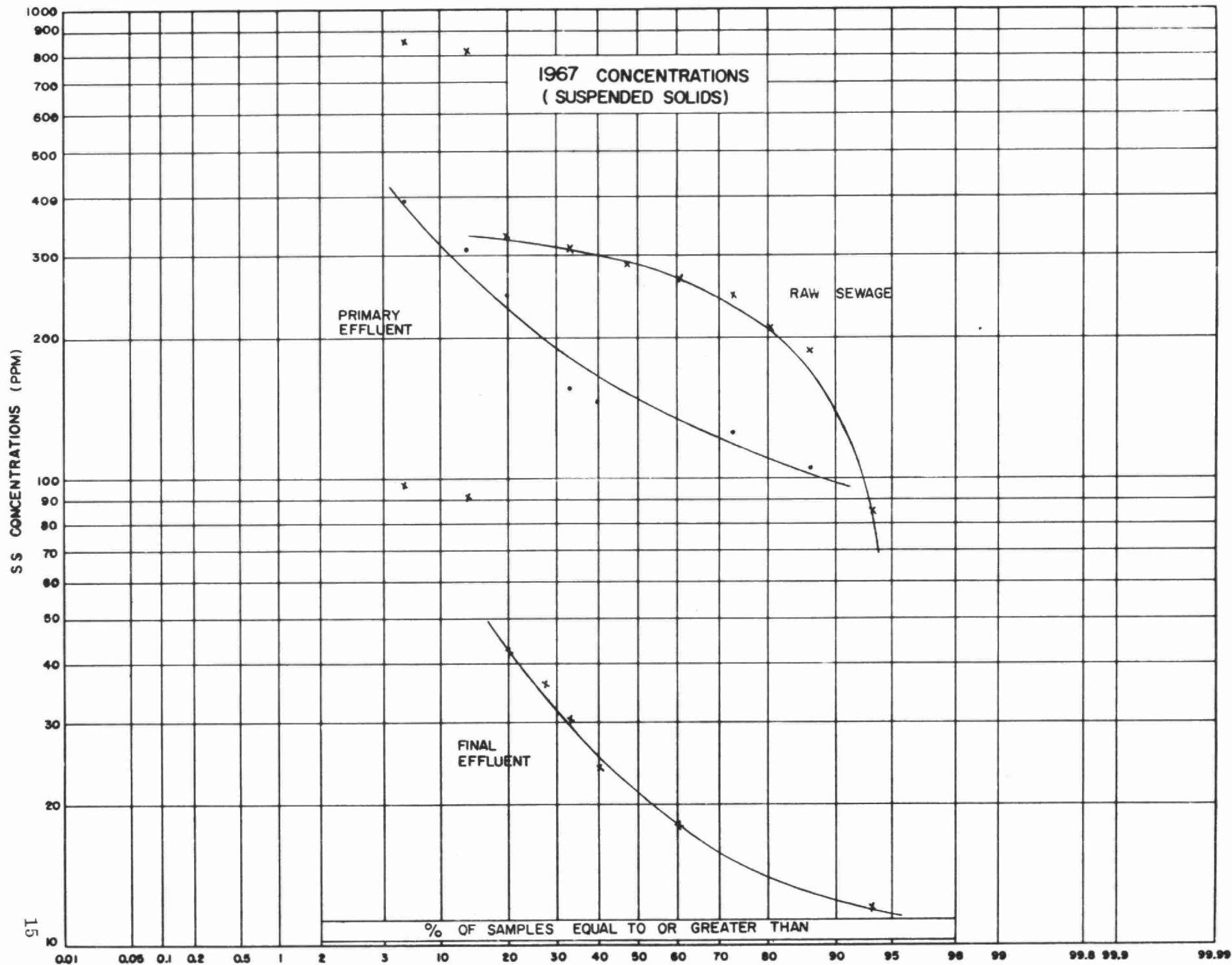
# FLOW DATA

Month	Total Flow ( MG)	Avg. Daily Flow (MGD)	Max. Daily Flow ( MG)	Min Daily Flow (MG)	Max. Rate (MGD)	Min. Rate (MGD)
January	2.335	.075	.108	.058	.216	.066
February	1.846	.066	.106	.049	.240	.054
March	2.911	.094	.142	.059	.294	.066
April	2.493	.082	.152	.053	.390	.066
May	1.893	.061	.108	.034	.228	.017
June	1.620	.054	.099	.018	.216	.003
July	1.401	.045	.084	.012	.480	.006
August	1.143	.037	.062	.018	.414	.012
September	1.228	.041	.082	.014	.390	.006
October	1.575	.051	.094	.012	.360	.006
November	1.470	.049	.077	.021	.396	.012
December	1.985	.064	.185	.024	.444	.012
Total	21.900	.060				
Average	1.825					

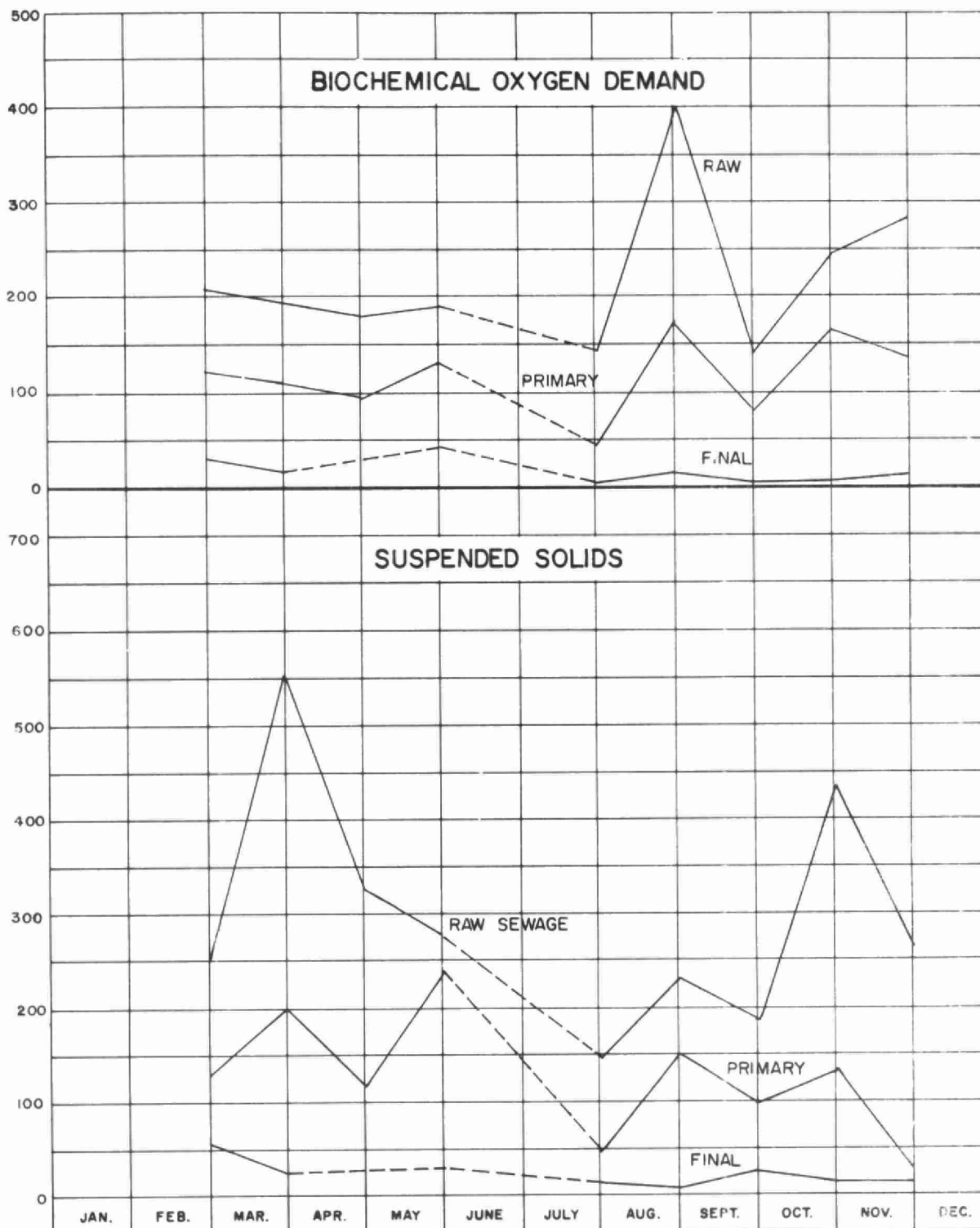








CONCENTRATION - PPM



# GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	-	-	-	-	-	-	-	-	- *
FEB.	210	32	84.8	1.64	241	54	77.6	1.73	- *
MAR.	197	20	89.8	2.58	552	22	96.0	7.71	- *
APR.	180	-	-	-	324	-	-	-	- *
MAY	190	42	77.9	1.40	276	29	89.5	2.34	- *
JUNE	-	-	-	-	-	-	-	-	- *
JULY	143	6.4	95.5	.95	145	13	91.0	.92	21
AUG.	400	11	97.2	2.22	230	9	96.1	1.26	14
SEPT.	140	5	96.4	.83	188	22	88.3	1.02	14
OCT.	246	6.8	97.2	1.88	434	13	97.0	3.32	15
NOV.	281	11	96.1	1.98	259	16	93.8	1.79	11
DEC.	-	-	-	-	-	-	-	-	13
TOTAL	-	-	-	22.34	-	-	-	29.67	-
AVG.	221	17	92.3	1.86	293	22	92.5	2.47	14.7

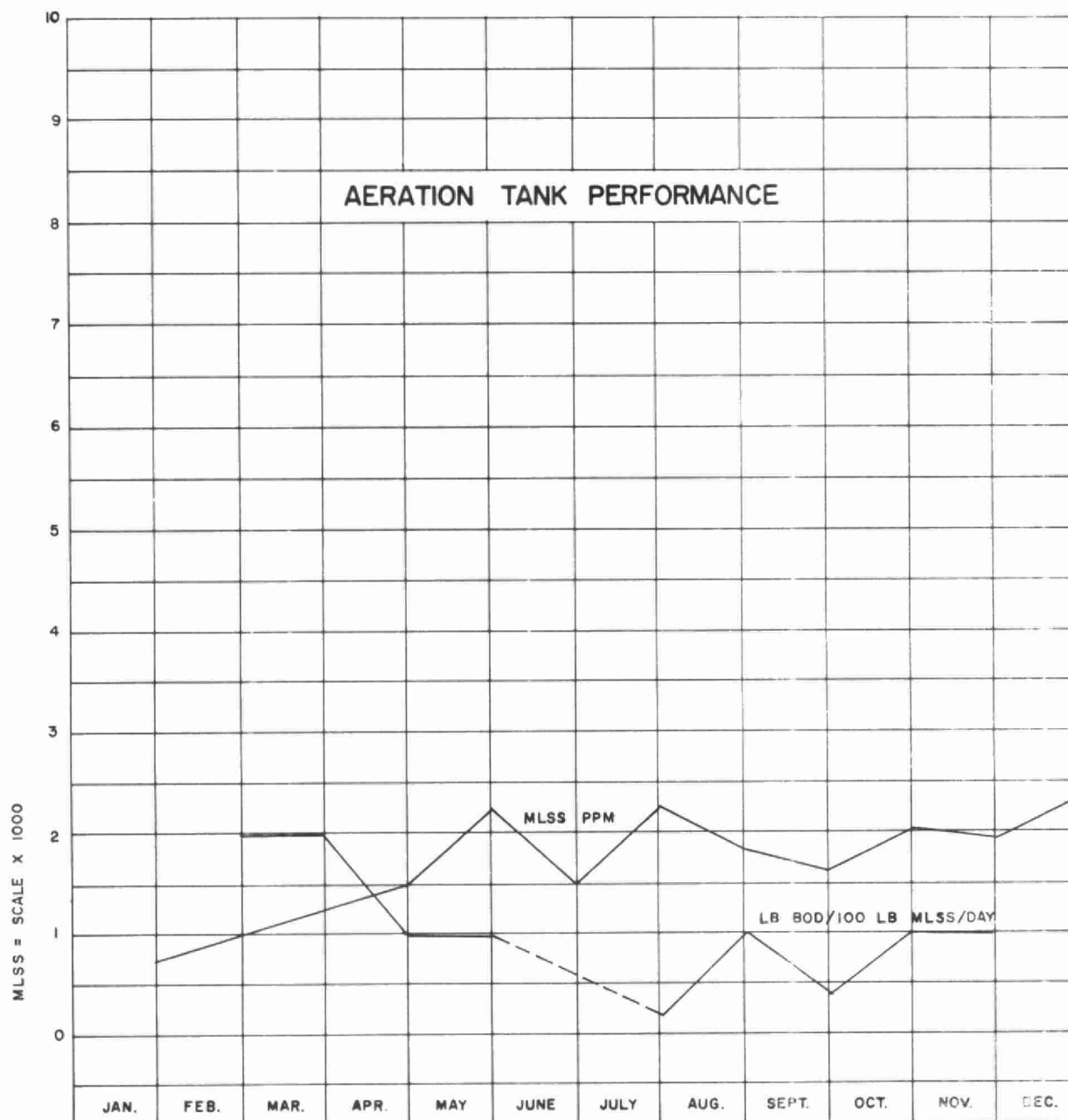
Note: Effluent sample for April not representative and therefore was not used.

\* Grit removal not recorded.

## COMMENTS

The average BOD and suspended solids of the raw sewage concentrations were 221 and 293 respectively. The average BOD and suspended solids of the final effluent concentrations were 17 and 22 ppm respectively indicating a removal efficiency of 92.3 and 92.5% respectively.

Approximately 15 cubic feet of grit per month were removed from the influent works. This is equivalent to an average of 8.1 cubic feet per million gallons of sewage received, which is considered above average. However, this was mainly due to the reconstruction of streets within the municipality.



## AERATION SECTION

MONTH	PRIM. EFFL B.O.D. PPM.	ML.SS. PPM.	LBS BOD. PER 100 LBS. M. L. S. S.
JANUARY	-	750	-
FEBRUARY	127	1000	2
MARCH	115	1250	2
APRIL	99	1500	1
MAY	135	2250	1
JUNE	-	1500	-
JULY	47	2282	0.2
AUGUST	172	1807	1
SEPTEMBER	70	1628	0.4
OCTOBER	169	2056	1
NOVEMBER	136	1983	1
DECEMBER	-	2361	-
TOTAL	-	-	-
AVERAGE	119	1697	1

### COMMENTS

The organic load to the Waterdown plant was extremely low with a food to micro-organism ratio of 1 lb. of BOD to 100 lbs. mixed liquor suspended solids. The plant is being operated as an extended aeration plant with primary clarifiers rather than as a conventional activated sludge plant.

The capacity of one blower was reduced by approximately 50% to conserve electrical power and reduce costs.

## CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	2.335	-	-
FEBRUARY	1.846	-	-
MARCH	2.911	-	-
APRIL	2.493	-	-
MAY	1.893	-	-
JUNE	1.620	* 128.00	1.12
JULY	1.401	228.25	1.63
AUGUST	1.143	224.00	1.96
SEPTEMBER	1.228	193.50	1.58
OCTOBER	1.575	** 70.50	.99
NOVEMBER	1.470	-	-
DECEMBER	1.985	-	-
TOTAL	21.900	844.25	-
AVERAGE	1.825	211.06	1.45

\* Chlorination for 21 days

\*\* Chlorination for 14 days

## COMMENTS

The plant effluent was chlorinated during the summer months for disinfection purposes. A minimum chlorine residual of 0.5 ppm after 15 minutes is maintained with an average dosage rate of 1.45 ppm.

LABORATORY LIBRARY



\*96936000119890\*

## CONCLUSIONS

The average daily flow was 20 percent of the dry weather design flow. This low flow is reflected in the abnormally high cost of treatment in terms of gallons of sewage treated which was \$620.33 per million gallons. The total cost of operation was \$13,585.15 which is high for this type and size of plant.

Date Due